楽友 (Raku-yu) : Kyoto University newsletter, Issue 1

Public Information Division, Kyoto University

Greetings from Kyoto-U

楽友 Raku-Yu

Kyoto University Newsletter

SPRING 2002
Issue **1**

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楽友 *Raku-Yu*

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A Note on order of names
As a general rule, names appearing in *Raku-Yu* are written in given name/family name order.

Editor's notes

For the first time since it was established in 1897, Kyoto University is starting a newsletter in English aimed toward people outside Japan. Prof. Makoto Nagao, president of Kyoto University, realized the necessity to publicize the activities of the university to make it more widely known in the international community of the 21st century, although it has already gained a high reputation domestically in the 20th century. The editorial committee has chosen the name *Raku-Yu* for the newsletter. The Kanji (Chinese character) for "Raku," 楽, means "ease or comfort" or "love or like" and the Kanji for "Yu," 友, means "friends." This name was taken from the assembly hall called "Raku-Yu Kaikan" (Kaikan meaning assembly hall) that commemorated the 25th anniversary of the founding of Kyoto University. The then president of the university, Prof. Torasaburo Araki, gave the name to the assembly hall, most likely hoping that university graduates would socialize with each other there. The first issue of *Raku-Yu* contains a variety of articles, including reviews of some unique research projects under way at Kyoto University, essays by a foreign researcher and foreign students, a guide to the sights that can be seen around the campus, and introduces Yoshida shrine, where I had my wedding a long time ago! It is my wish as editor in chief that *Raku-Yu* enables readers worldwide to discover what is happening at Kyoto University, and becomes the bridge that unites in friendship the people of the university with world citizens of the new millennium.

Takashi Endo, Editor in Chief, The Editorial Committee of *Raku-Yu*

"Tamamo-no-mae," a Tale from the *Otogizōshi*

Paper with illustrations in color, manuscript, 2 volumes, author and publisher unknown, 24.0 ×18.4 cm

The *Otogizōshi* is a collection of more than 400 short stories written between the mid-fourteenth and early seventeenth centuries. Most of the stories are by unknown authors and were handed down through oral retelling among the common people, a process through which they eventually arrived at their final forms. Kyoto University has in its collection about 150 copies of the *Otogizōshi*, in both scroll and booklet format, representing a total of about 90 variants.

The cover of the first issue of *Raku-Yu* features an illustration of a scene from "Tamamo-no-mae," one of the most memorable tales from the *Otogizōshi*. Set some 850 years ago, it is the story of a court lady at the palace of the ex-emperor Toba named Tamamo-no-mae, who was both incomparably beautiful and extremely learned. In reality, however, Tamamo-no-mae was a several hundred-year-old fox who had assumed human form. The scene on the cover portrays a visit to Tamamo-no-mae by some young court nobles, who have heard of her great renown. Tamamo-no-mae and the young nobles are discussing music. Tamamo-no-mae is seated behind the vermilion screen. The carefully executed illustration employs the traditional techniques used to illustrate the literary classics of the Heian period, such as the *Genji Monogatari*. Together with the exquisitely ornamented paper, it conveys to us today a sense of the dazzling world of the court in those days.

Makoto Nagao Born in 1936 in Mie Prefecture. Dr. Nagao graduated from Kyoto University, Department of Electrical Engineering in 1959 and obtained his MS and Ph.D. from Kyoto University in 1961 and 1966 respectively. He was an associate professor from 1968 to 1973. He became a full professor of Electrical Engineering, Kyoto University in 1973.

Dr. Nagao's research activities are in the area of pattern recognition, image processing, natural language processing, machine translation, and artificial intelligence in general. As the director of the University Library he started the service operation of a digital library in 1995, which embodied his own research work known as "Ariadne", a prototype digital library completed in 1994.

He has been the President of Kyoto University since December 1997, also the President of the Japan Association of National Universities since April 2001.

Kyoto University – with its Eyes on the Future

The 20th century was referred to as the "Century of Science and Technology," one of unprecedented development. Although we hoped that a peaceful coexistence on earth could be realized, the negative aspects of human society, such as the depletion of natural resources, explosive population increases, global warming, and environmental pollution, have emerged explicitly and definitely.

We have entered the 21st century with many unknowns, and have no choice but to continue to sail onward through uncharted ocean. In order to solve these difficult problems, the world must change its concept of "PROGRESS" to the concept of "HARMONIOUS COEXISTENCE." Even though we have no guides before us to chart our way, we need a compass to reach our goal of this new concept of "HARMONIOUS COEXISTENCE." Universities should play the part of a compass to this new concept, entrusted with the mission of creativity and the accumulation and utilization of knowledge.

Since its establishment as the second oldest national university in Japan, its spirit of "Academic Freedom and Independence" has allowed Kyoto University to expand and grow for over a hundred years as a comprehensive university. It now has fourteen Graduate Schools, ten Faculties, twelve affiliated research institutions and nineteen affiliated research and educational centers. During this period, it is remarkable that the university has produced five of the seven Japanese Nobel Prize Winners in natural science from our alumni. In order to meet the demands of society in the new century, the university recently created six new Graduate Schools such as the Graduate Schools of Biostudies, Informatics, Energy Science, Human and Environmental Studies, etc., as well as several advanced centers including International Innovation Center and Venture Business Laboratory to cooperate with industry.

Kyoto University has many foreign students and visiting researchers. It is intensifying the international relations with representative universities in the world and unfolding research activities all over the world. It has overseas liaison offices particularly in Bangkok and Jakarta in order to form a base for research and researcher exchange in Southeast Asia.

In the 21st century, we will need a society in which people will not only look forward to the development of scientific technology, but also will coexist with scientific technology and all the creatures of the Earth. This does not mean a mere search for civilization's place in scientific technology, but building society where human beings can maintain their own cultures and values while enjoying the benefit of scientific technology.

Kyoto University, located in the 1,300-year-old capital of Japan, has achieved world top-level excellence in the fields of natural science, engineering, medical science, and agricultural science, as well as in the fields of humanity and social science, including philosophy, oriental classics, psychology, law, economics, etc. With this academic tradition, Kyoto University is challenging to study yet-to-be recognized research themes from a creative and unique standpoint.

Thus, Kyoto University hopes to contribute toward a realization of "HARMONIOUS COEXISTENCE" in the 21st century.

Makoto Nagao
President of Kyoto University

長尾真

Life Drama, a Scenario of the Genome that Requires Adlib: Strategy of the Immune System

One of the most striking messages by the complete nucleotide sequence determination of the human genome is that the number of genes in the human genome is approximately 30,000, which is only 2 folds more than that of fruit fly. This finding has raised an important and puzzling question. How can humans accomplish such sophisticated functions as nervous and immune systems by a limited number of genes?

One strategy to amplify genetic information is to alter DNA sequences themselves after birth. The immune system takes advantage of genetic alteration to amplify the genes for antigen recognition. During lymphocyte differentiation, T and B lymphocytes generate the V region of antigen receptor genes by recombination of two or three subsegments of the V region. Since each lymphocyte recombines a random pair of subsegments, each consisting of multiple copies up to 80, combination of these segments generates a huge number of antigen receptor genes. After differentiation into mature IgM-expressing B lymphocytes, antigen stimulation induces two additional types of genetic alteration in B lymphocytes which produce antibodies. First, somatic hypermutation introduces million times more frequent point mutations in the V region gene responsible for antigen recognition. This mutation can generate antibodies with higher affinity to a given antigen, allowing the antibodies to eliminate a small amount of the antigen with high efficiency. Second, class switch recombination takes place in the heavy-chain constant (C) region locus and replaces the C region with other C regions which are involved in elimination of recognized antigens. Class switch recombination gives rise to a variety of isotype classes such as IgG, IgE and IgA.

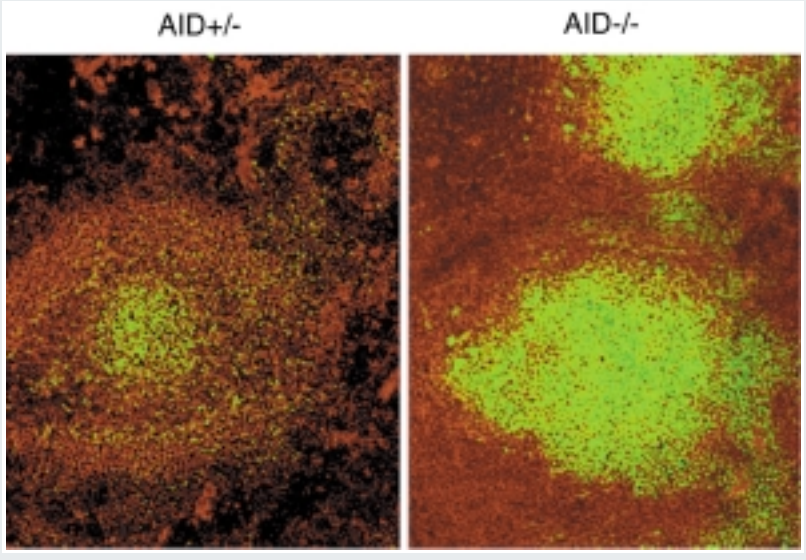
Until very recently, the molecular mechanism to accomplish class switching and somatic hypermutation was a complete mystery. Recent discovery of Activation Induced cytidine Deaminase (AID) has revealed that class switch recombination and somatic hypermutation share a common mechanism. In addition, AID is speculated to be an RNA editing enzyme from its structure, biochemical reaction and chromosomal localization. This indicates that RNA editing, another mode of the genetic alteration system is coupled with DNA alteration such as class switch recombination and somatic hypermutation. Taken together, our genome information has to be diversified and enriched by genetic alteration to accomplish higher order biological functions such as the immune defense system. Thus, the drama of life is written by a scenario that requires adlib for its sophistication.

Tasuku Honjo

- Born in 1942.
- Graduate of the Graduate School of Medicine, Kyoto University
- Ph.D. and M.D., Kyoto University
- Professor, Graduate School of Medicine, Kyoto University
- URL http://www2.mfour.med.kyoto-u.ac.jp/English/Engversion.html

"Genes hold within themselves the ability to change."

Prof. Honjo is a quiet man. But when he speaks there is a strength in his voice that makes one sense a passion welling up from deep within, like thermal energy. He says he finds immunology fascinating and began his studies in that field purely out of a desire to unravel its mysteries. He also feels fortunate to live at a time when great strides are being made in molecular biology. He plans to complete his current research in three years' time, and is carefully considering what he plans to become involved in after that. "I may become a professional golfer," he says. It will be exciting to see what unexpected adlib turns Prof. Honjo's life scenario will take in the years ahead.



Accumulation of germinal center B cells in AID-/- mice
The germinal center is a site where class switch recombination and somatic hypermutation take place. In the absence of AID, activated B cells accumulate and form giant germinal centers.The figure represents spleen from AID+/- and AID-/- mice. Green colour shows activity proliferating germinal center B cells.

Materials Science, Molecular Science, and "Elements Science" — Creation of New Functional Materials by Synthetic Chemists —

Kohei Tamao

- Born in 1942.
- Graduate of the doctoral program, Graduate School of Engineering, Kyoto University
- Ph.D., Kyoto University
- Professor and Director, Institute for Chemical Research, Kyoto University
- URL http://www.scl.kyoto-u.ac.jp/~tamao/index_e.html

"We synthetic chemists are the only ones capable of creating useful molecules that have never existed before."

It saddens Prof. Tamao that in recent years people have begun to associate negative images such as environmental pollution with the word like "chemicals." His voice becomes stronger as he says that he wishes the benefits of chemistry were more widely known. He points out that organic silicon compounds, his field of specialization, are chemicals that play a very familiar role in our lives. We are in contact with them every day without realizing it, in forms ranging from cosmetics to electronics. "When a new organic compound is created the most amazing things become possible, one after another," says Prof. Tamao. As he laughs impishly, it seems as if a flame of creative energy more powerful than the magic spell of the most brilliant wizard is quietly burning behind his eyeglasses.

Chemistry is a central, useful, and creative science, and everything around us is made of chemicals.

The Kyoto University COE (Center of Excellence) project in chemistry, entitled "Elements Science", started in 2000 is aimed at creation of new functional materials, especially organic and inorganic frameworks, which feature the characteristics of particular elements. Our concept of "Elements Science" constitutes the basis for the widely accepted "Molecular Science" and "Materials Science", since materials are generally composed of molecules, which in turn are made of atoms of individual elements. Thus, it is the properties of key elements that characterize the primary properties of materials. Some new molecules and materials have been created by ten research groups in this COE project, which would provide the next generation of electronic, optical, and magnetic devices. Representative examples are as follows.

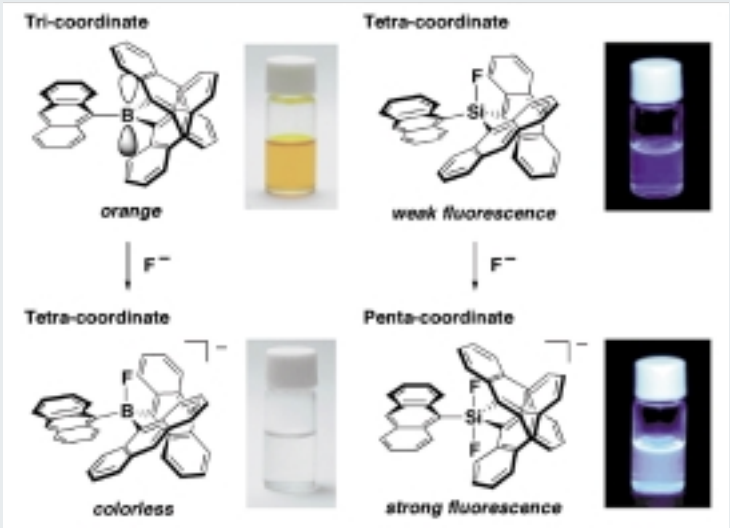
Tamao group as project leader has prepared certain silicon-containing cyclic molecules called siloles that have a high electron-accepting properties. These new molecules exhibit the best electron-transporting properties for electroluminescent devices, being applicable to large-area flat panel displays as an alternative to liquid-crystal displays. Tamao group has also demonstrated a new concept that photophysical properties of boron or silicon-containing pi-conjugated systems can be controlled by the coordination state change of the element, as exemplified by a dramatic color change or an increase in the fluorescence by coordination with a fluoride ion (see Figure).

In an elemento-organic material field, Prof. Koichi Komatsu prepared new carbon nano-clusters C_{120} and C_{180} from C_{60} by a mechanochemical solid-state reaction for the first time, which are candidates for future molecular electronics. Prof. Tamejiro Hiyama and Prof. Norihiro Tokitoh are very active in creation of novel molecules containing main group elements, such as boron-silicon containing bimetallic synthetic reagents and a germanium containing naphthalene, respectively.

In an elemento-inorganic material field, Prof. Teruya Shinjo created submicron nickel-iron permalloy dots with a spot of perpendicular magnetization at each center of the dots, which would be useful for the next generation high-density magnetic recordings. Prof. Mikio Takano has been developing a new science of superconducting transition metal oxides. Prof. Toshinobu Yoko is an expert in creation of new photonic tailor-made glasses.

In a molecular-assembly field, Prof. Gunji Saito has created some sulfur-containing organic super-conducting materials, in which weak sulfur-sulfur interactions play a key role. Prof. Yukio Sugiura has been modifying DNA molecules based on the zinc-finger proteins. Prof. Naoki Sato is analyzing electronic structures of molecular aggregates by the inverse photoemission spectroscopy (IPES).

These examples clearly demonstrate that synthetic chemistry based on the "Elements Science" is the most fundamental discipline directly correlated with the core science and technology such as information-technology, environment technology, nano-technology, and biotechnology.



Photophysical properties control based on the coordination number of the main group element.

Area Studies at Kyoto University

Kyoto University has two area studies institutions, the Center for Southeast Asian Studies (CSEAS) and the Graduate School of Asian and African Area Studies (ASAFAS). They have a combined faculty of 57 members, and its joint library which is now acquiring more than 20,000 books a year, is expected to build one of the best Asian and African collections in the world in a few years with the funding of the Center of Excellence (COE) grant. They publish their own area studies journals, Tonan Ajia Kenkyu (Southeast Asian Studies) and Ajia Afurika Chiiki Kenkyu (Asian and African Area Studies) respectively, and a new internet journal, Kyoto Review of Southeast Asia, designed to introduce Japanese and Southeast Asian language works on Southeast Asia in English.

Since the CSEAS and ASAFAS are multi-disciplinary institutions and their faculty members carry out tens of research projects from medical and ecological to religious to studies on contemporary politics and economies in Asia and Africa, I would like to explain some of the research activities in which I am directly involved to provide some idea about research activities at Kyoto University.

One is an international joint research project on the formation of the East Asian regional system. The project examines the rise of East Asia as a world region, from the creation of Free Asia under American hegemony in the 1950s and 1960s, the regionalization in the 1980s and 1990s, the financial crisis in the late 1990s and the current attempts at regionalism. The project is funded by Japan Society for the Promotion of Science (JSPS) and its participants include leading Thai, Malaysian, Singaporean, Indonesian and Filipino as well as Japanese social scientists both at Kyoto University and at other institutions.

The JSPS-NRCT Workshop held in March 2000 at Thammasat University, Bangkok on the theme "The Future of Southeast Asian Studies.

Another is a study of Indonesian elite. I have worked on Indonesian military elite for more than ten years, closely looking at organizational and personnel changes in the Indonesian military to understand the civil military relations and intra-military politics. As part of the project, I have accumulated files of more than 6,000 military officers, their birth dates, places of birth, their ethnic backgrounds, their education, their military careers and so on. Building on this project and in view of the increasing importance of the parliament, both national and local, we have started to examine the sociological profiles of parliamentary members and party politicians to understand Indonesia's democratization and decentralization.

While these projects are basically social scientific in orientation, the two decribed below are more broadly multi-disciplinary, the kind of research projects only do-able at institutions such as the CSEAS and ASAFAS. One is a study of ageing in Southeast Asia. This project started in 2001 with the participation of medical scientists, anthropologists, ecologists, economists and political scientists from the CSEAS. Ageing is a serious problem in Japan, and it is expected that South Korea and China, and then Southeast Asian countries above all Thailand are going to face this problem of ageing in the not too distant future. And yet we have hardly any systematic, comparative data on ageing. This is the reason we have started seminars and workshops on this question, and if we get funding from the government, we are planning to start in-depth field research in 2002.

The other is a "Beyond-the-Border" research project, titled Everyday Life and Policing in Maritime Southeast Asia, funded by the government research grant. In this project we look at the ways people go and interact beyond borders in maritime Asia and how the states in the region police their borders and control the movement of people, goods, and money. This project also has a strong educational component, because it is designed in such a way that Ph.D. candidates of the ASAFAS can participate in the project and do their own dissertation research under the supervision of their advisers in the field.

As these examples hopefully show, many different inter- and multi-disciplinary research projects are carried out at Kyoto University, often in collaboration with scholars in Asia and Africa, making Kyoto University one of the foremost centers in area studies in the world.

Takashi Shiraishi

- Born in 1950.
- Graduate of the College of Arts and Sciences, the University of Tokyo
- Ph.D., Cornell University
- Professor, Center for Southeast Asian Studies (CSEAS), Kyoto University
- URL http://www.cseas.kyoto-u.ac.jp/index_en.htm

"We hope to create a place where all sorts of scholars can gather."

Prof. Shiraishi says he feels particularly comfortable at Kyoto University. The main reason is the world-class library collections of the CSEAS and ASAFAS. He believes that all that is required is well-equipped research facilities that are used effectively. Plans call for the launch in March of an Internet journal to be called Kyoto Review of Southeast Asia, and in autumn a large-scale international symposium is to be held.

Frontiers of Radio Science in the Study of Space and the Earth's Atmosphere

Shoichiro Fukao

- Born in 1943.
- Graduate of the master's program, Graduate School of Engineering, Kyoto University
- Ph.D., Kyoto University
- Professor and Director, Radio Science Center for Space and Atmosphere (RASC), Kyoto University
- URL http://www.kurasc.kyoto-u.ac.jp/radar-group/index-e.html

"You must have dreams to do research at the university level."

Even at Kyoto University, which is sometimes known as "Expedition University," the broad scope of research fields covered by RASC stands out. But at the same time, the center's work is firmly rooted in real life. For example, it is hoped that observation of the atmosphere at the equator will make it possible to predict changes in weather and climate on a global scale, and to thereby contribute to more efficient agricultural production. Making use of ground-based radars in his work, Prof. Fukao performs research propelled by dreams but with his feet firmly on the ground. After charming us with his kindly smile and witty conversation, his facial expression as he turns to check data on a monitor screen is all concentration, a striking contrast with his jovial earlier self.

The Earth's atmosphere makes a gradual change from a dense neutral gas near the surface to an extremely dilute ionized gas (or plasma) as we approach planetary space. This "inner space" is considered to be the boundary of our environment and the base from which the human race will depart for exploration of "outer space." The Radio Science Center for Space and Atmosphere (RASC) of Kyoto University has promoted research relevant to space and the atmosphere with advanced radio techniques. Radar remote sensing is applied to the part of the atmosphere closest to the Earth, while in-situ measurements with satellites and simulations with computers are utilized for space plasmas father out. The ultimate goal of the latter research is to establish the basic techniques for a solar power station (SPS). Here, we will introduce primarily the SPS and the atmospheric radars which radiate controlled, high-power radio waves into space.

The SPS will ultimately be an energy source for the human race. It will intercept immense amounts of solar radiation using huge solar cells in space to generate electric power which will then be transferred to the surface along a microwave beam. RASC has been developing the basic techniques of the SPS, focusing on the microwave power transmission (MPT) aspect. It has been conducting various demonstration experiments of MPT since it succeeded in an MPT experiment on a space borne rocket in 1983. A Microwave Energy Transmission LABoratory (METLAB) with an anechoic radio-wave chamber specifically designed for MPT experiments was constructed at RASC in 1996. The development of new MPT systems has since been conducted at METLAB. RASC plans to perform a space MPT experiment with a power satellite in the near future.

Atmospheric radar techniques are developed and employed for sensing atmospheric dynamics. Winds and other parameters aloft are deduced from echoes reflected back from the atmosphere. RASC established the MU (Middle and Upper atmosphere) radar in 1984 and has resolved numerous mysteries of the atmosphere with it, especially above 10 km in the region once called the "Ignorosphere" due to the scarcity of observations from that region. The region used to be thought so quiet that no significant meteorological phenomena occurred there. However, the MU radar has revealed that various atmospheric waves are raging there, and even the seasonal change of global-scale winds around 60–90 km is controlled by these waves propagating upward from near the surface. There still remain numerous questions for the MU radar to investigate regarding the sources and global distribution of the waves.

The equatorial region, especially near Indonesia, is regarded as the primary origin of global-scale motions in the Earth's atmosphere. RASC has recently established a MU-like radar called the "Equatorial Atmosphere Radar" (EAR) at the equator on Sumatra Island, Indonesia. It is expected that a number of the mysteries of the equatorial atmosphere will be enlightened with the EAR through collaborations between RASC and its Indonesian counterpart in the near future.

An aerial view of the MU radar of Kyoto University

The Kyoto University Museum

Takeshi Setoguchi
- Born in 1942.
- Graduate of the Faculty of Science, Kyoto University
- Ph.D., Texas Tech University
- Professor, Graduate School of Science, Kyoto University
- Director, The Kyoto University Museum
- URL http://www.museum.kyoto-u.ac.jp/index_e.htm

The Kyoto University Museum was established in 1997, to store more than two million items from the fields of archeology, Japanese and oriental history, natural sciences, education, and also applied fields such as forestry and agriculture. All of these items have been collected and studied by the staff at Kyoto University during the past 100 years, since the university was founded in 1897. Kyoto University has had a long tradition of field science, as its nickname –Expedition University– tells us. In the exhibition hall, selected facets of collections are shown based on research activities with a special emphasis on the field of natural science. We hope that the most interesting highlights of our activities in various field sciences will satisfy visitors.

"The basic concept of the museum is to display items collected in fieldwork by Kyoto University scholars. By combining sophisticated research findings with advanced display technology we hope to present the work of the university in a whole new way."

Location: The Kyoto University Museum faces Higashioji Street, a major thoroughfare, and is adjacent to the university. This location is ideal in terms of easy public access.
Hours: 9:30 a.m. to 4:30 p.m. (no admittance after 4:00 p.m.)
Closed: Mondays and Tuesdays (including holidays), New Year's break (December 28 to January 4)
Admission fee: General ¥400; high school, university and college students: ¥300; primary and middle school students ¥200 (group discounts available)

The retrospective exhibition of Dr. Kinji Imanishi. Primatology at Kyoto University was started with research on wild Japanese macaques by Dr. Imanishi and his students. Since then, the researchers of Kyoto University have played a leading role in primatology with their innovative research methods of individual identification and their long-term study of specific groups. Although research in the beginning focused largely on the social and ecological aspects of primates, research now has expanded to include studies of morphology, psychology, brain research, genetics, and other areas. It is a unique tradition of Kyoto University that researchers in these disciplines often combine both laboratory and field research efforts.

Exhibit of the field studies on the canopy of a tropical rainforest. Tropical rainforests are centers of biodiversity and ecosystem function in this world. Photosynthesis activity is highest on the surface of the forests, the so-called canopy. In Lambir Hills National Park, Sarawak, Malaysia, Kyoto University has constructed a canopy access system consisting of tree towers and walkways, which has made a canopy biology program possible. The long-term ecological research of tropical rainforest using this system was started in 1992, and its fruitful results have attracted the attention of tropical biologists through the world.

Features 1

Kyoto University International Symposium
on the Changes in the Japanese Economy Facing the New Century

November 28, 2001: Brunei Gallery, SOAS, University of London
November 30, 2001: Playfair Library, University of Edinburgh

A multilateral examination of the problems facing Japan's economy–the second largest in the world–is an important and significant task for anyone concerned with the development of the global economy in the 21st century. Based on this idea, scholars from Graduate School of Economics and the Institute of Economic Research presented papers and participated in the discussion at the symposium. The Kyoto University International Symposium was originally conceived as an effective means to disseminate the findings from research performed at the university to scholars overseas. The latest sessions mark the second time it has been held. Scholars from the session venues were invited to act as chairs and discussants. Both sessions turned out to be valuable opportunities to discuss research findings and exchange information. The London session was attended by 202 persons, and the Edinburgh session by 88. The symposium was also a part of Japan 2001, a nationwide project involving events throughout the United Kingdom.

URL http://www.kyoto-u.ac.jp/kokuryu/UKsympo/index.html

The poster, which used the makeup of kabuki actors as a motif. It had a strong impact when displayed against the gray stone walls of the town.

The venue for the Edinburgh session–Playfair Library at the University of Edinburgh.

Features 2

The TIDE Project
A First Step Toward a New Partnership

Trans-Pacific Interactive Distance Education (TIDE) is a joint research project begun in 1998 by the Center for Information and Multimedia Studies at Kyoto University and the Center for Digital Innovation at UCLA. The project has had a working system in operation for nearly four years with the assistance of NTT Corporation. Kyoto University and UCLA are linked via a "research network" (ATM [Asynchronous Transfer Mode] link, 5 Mbps) provided by NTT and the Internet, making distance lectures in real time possible using two-way video and audio transmission. The project allows participants to view university lectures delivered overseas, and it is quite attractive with students. The language used is English.

The lecture hall is fitted with three screens in front and two in back. Video from UCLA and Kyoto University can be displayed on the right and left, respectively.

The lecture begins at 8:45 a.m., which corresponds to 3:45 p.m. at UCLA. On the day we visited there were about 30 students in attendance in the lecture hall at Kyoto University. While the equipment is being adjusted, Prof. Kunio Takeyasu (Graduate School of Biostudies) and the students chat in a relaxed, lighthearted manner.

At last the lecture begins. The first portion is delivered by Prof. Jay Phelan from UCLA. We are startled by the clearness of the audio. Prof. Phelan appears on the screen, punctuating his points with exaggerated gestures. On the "electronic blackboard" in the center, notations written by Prof. Phelan are displayed in real time. The sense of "presence" is greater than we had anticipated. Multiple cameras automatically capture images in the lecture halls in the two countries, which are transmitted in both directions. The system automatically selects the appropriate images as the lecture progresses. Almost everything is automated, though humans can intervene to make fine adjustments as required.

"The students must first develop a command of usable English. Nowadays you have to present your research findings in English overseas in order to be recognized–especially those majoring in math and science." commented Prof. Takeyasu. "Even if Japanese students want to study abroad they run into difficulties due to things like the different semester system used overseas. In spite of all the talk about international exchange, the essential environmental elements are still not there yet. But it would make a real difference if distance lectures like this one counted as credits toward graduation. What we are going to do here may serve as a starting point toward the establishment of new partnerships with universities overseas, such as convertible academic credits."

Prof. Takeyasu and the students all seem right at home.

It seems that the "get together sessions," in which participants in the program meet each other, are a big hit each year. Friends who recognize their differences yet make an effort to understand each other–this may be the beginning of a new type of community.

(Date reported: November 30, 2001)

URL http://www.media.kyoto-u.ac.jp/distlearn/tide/

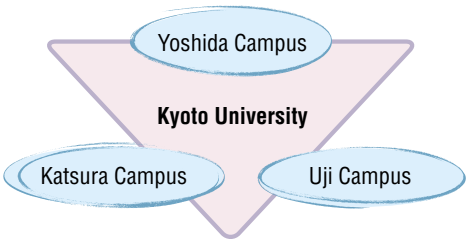
Features 3

A New Triangle Is Born

The Katsura Campus and Kyoto University's Strategy for the 21st Century.

Since the establishment of Kyoto University in 1897, the Yoshida district in the northeast portion of the city of Kyoto has been the main locus of the institution's activities. From this peaceful campus, nestled in the midst of Japan's ancient "thousand-year capital," many great intellectual creations have originated. In recent years, however, the university's needs began to outgrow the limited space available, and the need to construct a new campus became acute. This led in the autumn of 1999 to the decision by the university to build a third campus in the Katsura district in western Kyoto. The resulting "intellectual triangle" is the midst of completion and is poised to become the cornerstone of Kyoto University's strategy for the 21st century.

URL http://www.kogaku.kyoto-u.ac.jp
/katsura/index.htm (Japanese only)



Katsura Campus Creating a "Techno-science Hill"

The idea that the city of Kyoto, with its rich cultural tradition, is uniquely well placed to disseminate advanced knowledge and skills to the world at large is the basis for the choice of the Katsura district as the location for the new campus. Construction is proceeding at a quick pace as the first stage of the relocation, scheduled for April 2003, approaches. Plans call for the Graduate School of Engineering and the Graduate School of Informatics to move to the new campus. Conceived as a "Techno-science Hill," the Katsura Campus is to become a locus where technology and science merge in exciting new ways. Soon this new base for exploring fresh areas of knowledge will open – a place where technology, regions, and nature blend and interact in sophisticated ways, and where research in engineering and informatics is undertaken based on a new paradigm for the 21st century.

The scale model of the Katsura Campus. The campus consists of four clusters. The clearing of land has been kept to a minimum in the area of the site adjoining a bamboo grove in order to preserve a sense of harmony with the surroundings. The campus is aiming for certification to ISO 14001.

Artist's conception of Cluster A when completed

Cluster A under construction (December 2001)

Yoshida Campus

Pursuing a Harmonious Blend of Tradition and Progress

The Yoshida Campus has been at the core of the university's activities since its founding. In particular, the central portion of the campus is home to structures of varying architecture, ranging from brick buildings dating back to the time of the institution's establishment – such as the clock tower that serves as the symbol of the university – to modern laboratory buildings. It can truly be said to represent the history of Kyoto University in tangible form.

The clock tower (completed in 1925) is the symbol of Kyoto University. It is presently in use by the Administration Bureau. Plans call for the interior to be remodeled in Autumn 2003 and the building newly used as a memorial hall.

Uji Campus

Establishing an Outstanding Laboratory Environment

Formerly owned by the Imperial Army, the site of the Uji Campus came into the possession of Kyoto University in 1949. Full scale development started around 1965, and the campus is now home to a collection of research institutes and centers, and large-scale testing facilities devoted to work in natural science and energy related fields. But even though the campus hosts many state-of-the-art laboratories engaged in the development of cutting edge science and technology, it is rich in greenery and enjoys a tranquil suburban setting.

The main approach to the Uji Campus. The foreground buildings are the Joint Research Laboratories.

Professor Bruce Auld

Bruce Auld
Visiting Professor, Graduate School of Agriculture, Kyoto University
"The spirit of cooperation between the upper and lower classmen at Kyoto University creates a wonderful environment for research."

The longer we stay, the more we appreciate Kyoto, the University and the people.

I was fortunate enough to make a short visit to Japan with my family in 1993, working in Tsukuba and spending a tantalizing few days in Kyoto. When an invitation arrived from Prof. Misako Ito to be a Visiting Professor at Kyoto University, I felt especially honoured to be asked to such a highly internationally respected institution and we were all thrilled at the prospect of spending more time in this unique city.

It is a great pleasure to visit the beautiful old buildings and their tranquil garden settings in Kyoto. Many of the more modest, historically recent buildings, like Kawai Kanjiro's house, I find very appealing. The harmony achieved with scale, proportion and transitions from interior to exterior create a wonderful sense of peace. I also appreciate the way history continues to be preserved and maintained here in things such as the little Ebisugawa hydroelectric plant near the Heian Shrine and the many colourful festivals.

Contrasts in Kyoto are often diverting: the small rice fields with the red Higan-bana flowers on their levees, adjacent to modern buildings along Kitayama Street; the horse from the riding club at the University strolling past the Yukawa Institute for Theoretical Physics.

My first impressions at the University concerned its size and scope, particularly in the area where I am working, The Graduate School of Agriculture. The range of activities being undertaken from landscape architecture and farming systems to tissue culture and molecular biology is very impressive. Within project areas, the contrasts between the scope and research detail is again often what is striking. For instance, in the Laboratory of Weed Science there is a project on the evolutionary ecology and genetics of weed breeding systems relating to herbicide resistance. This has involved a fascinating study of specific insect pollinators visiting different asymmetric flowers on the plant *Monochoria korsakowii.*

My later impressions are of the close interactions between academic staff and the post graduate students. This seems to me to be stronger here than in many other places and is to be commended. It is obviously productive and promotes a happy work environment, leading to thoughtfulness for each other and warm hospitality for visitors such as me.

Prof. Auld and his family. Mrs. Auld has a deep interest in Japanese pottery. She often visits towns known for their pottery, such as Hagi and Shigaraki. The Auld's son Robin plays forward on his school's soccer team. The day after this picture was taken he participated in the final match of the rookie championship.

Shugakuin Station on the Eizan line, which the family often uses. They also enjoy leisurely strolls through Kyoto. They are particularly fond of a certain shop selling tsukemono (pickled vegetables).

Our son, Robin, received a similar welcoming experience from the teachers when he enrolled at a local Junior High School, Shugakuin, where he was also invited to join their excellent soccer team. Living at the University's Shugakuin International House is very pleasant, with easy access to the University, the surrounding hills, Kurama, Yase and Ohara. There are many nice restaurants and fresh food shops in the neighbourhood too. Although we are familiar with Japanese food in the broad sense, it is exciting to experiment with things we have not had before like shiso leaves(*Perilla frutescens* var. *crispa*), myoga ginger and maitake mushroom.

The longer we stay, the more we appreciate Kyoto, the University and the people.

I hope to become a legal expert and build bridges between Japan and China.

Xiaoqing Luo, Graduate School of Law

Ms. Luo came to Japan in 1998 in the hope of furthering her study of the law. She lives in Osaka with her husband and three-year-old son. When she arrived in Japan three years ago Ms. Luo couldn't speak a word of Japanese. Since then she has adapted well to life in Japan and says that two of her favorite things are natto (fermented soybeans) and rotenburo (open air baths).

■To begin with, please tell us about your career in China.

After graduating from law school, I went to work for a judge. For the first four years I served as a court clerk and then I was promoted to the post of assistant judge. I was mainly involved in the adjudication of civil trials.

■What made you decide to come to Japan to study?

The Chinese economy is presently developing at a rapid pace. Free economic activity is becoming more and more intense, and transactions involving foreign enterprises are increasing. Nevertheless, the legal system is not keeping pace with this rapid development. Lawsuits to settle disputes between companies or between companies and workers occurred frequently during my time working for the court, and I found that in many cases it was difficult to reach a judgment. This made me want to go abroad to study what sorts of laws have been established in other countries.

■Why did you choose Kyoto University, and what are your impressions of the school?

In my discussions with friends and older classmates I was told that Kyoto University is one of the leading universities in Japan. And once I learned of the high academic level of the Faculty of Law I decided that Kyoto University was where I wanted to study. What I found after coming here – so many celebrated teachers and diligent students – was exactly what I had hoped for. And more than anything I love the campus. I like the way that there are so many buildings still standing that tell of the history of Kyoto University, such as the lovely brick lecture halls.

■Tell us about your studies.

Right now I am studying the differences in credit law between Japan and China. My supervisor, Prof. Yoshio Shiomi, is a well-known authority in the field of credit law studies. It was through meeting him that my interest in this field was sparked. Prof. Shiomi is young and brimming with knowledge, and I learn all sorts of things from him every day. The other members of my seminar group also give me plenty of help. Whenever there is something about the Japanese language or Japanese law that I don't understand I can ask them, and they explain things to me patiently. I don't know what I would do without them. They are very kind to me in non-academic ways as well, such as when we go out on the town together or go on trips during the summer vacation.

■What are your dreams for the future?

In the years ahead economic interaction between China and Japan, and many other countries as well, is sure to become more and more active. I want to become an expert on the laws of both China and Japan so that I can build bridges that will contribute to the creation of ever better relations between our two countries.

■To sum up, what is your most memorable experience since coming to Japan?

Last year my parents came to visit me in Japan, and our whole family climbed Mt. Fuji together. The day before the climb we were relaxing in a rotenburo near Lake Kawaguchi, and I'll never forget looking up and seeing Mt. Fuji rising in the distance. I think Japan is really a very beautiful country.

(Date reported: November 10, 2001)

Courtyard of the Law Building. Students gather here between classes to chat and relax.

Xiaoqing Luo

Born in Shanghai, China in 1969.

Presently in the first year of a master's program at the Graduate School of Law, Kyoto University.

In front of the Center for Student Exchange. The center provides general support services for all aspects of the lives of international students and also provides instruction in Japanese language and culture. It is located inside this brick building, which was built in 1898.

In the seminar room. In front of the desk is a photo of Ms. Luo's son.

Aikido Club, Paul Smith

Paul Smith
Born in Australia in 1977.
Presently in the first year of a master's program in Civil Engineering Systems at the Graduate School of Engineering, Kyoto University.

Aikido teaches us to respect other cultures and techniques, for establishing a rapport between people.

The air in dojo (the practice hall) is cold and clear, and the mood tense. The two martial arts students, one of whom will take the offensive posture and the other the defensive, kneel formally, facing each other, and bow deeply. Then the training begins. Even as they strike each other forcefully, their breathing is synchronized, and their movements have the beauty of a formalized dance. This is why Aikido has been called "a dance, a method of self-defense, and the essence of the martial arts." After the match is over Paul sits once again in a formal pose. He does not relax his ramrod-straight posture once during the interview that follows.

"I first visited Japan at the age of 15. Then, when I was 19, I spent one year as an exchange student at a high school in Hakodate, Hokkaido," relates Paul. He says that his time as an exchange student was a wonderful experience. "The people were very warm, and they immediately opened their hearts to me, their foreign visitor. I'll never forget participating in the town's festival along with the local people. I helped carry the mikoshi (portable shrine) all over the town wearing nothing but a red loincloth." He says that the experience made him "want to learn more about Japan." After graduating from Adelaide University, Australia, Paul returned to Japan to enter graduate school at Kyoto University.

The Aikido Club practicing in the basement dojo of the Central Gymnasium.

Another valuable experience Paul had in Hakodate was encountering martial arts. He is particularly interested in Aikido.

The beauty of the moves is one of the attractions of Aikido.

"The object is not to defeat your opponent but to protect him/her while safeguarding yourself. Through the training you temper both body and mind, with the ultimate aim being to achieve 'spiritual harmony,' which means being at one with the world, with humankind, and with the universe. I like this philosophical aspect of Aikido."

Though he is very busy studying, Paul rarely misses practice, which takes place six times a week. Yohei Shirakawa, the captain of the Aikido Club, has this to say about him: "Paul practices very hard. His technique is quite solid, and our instructor often praises him." Daisuke Hayashi, one of the senior members of the club, says, "What's great about Paul is that he is more serious than anyone else during practice, but he's also the most cheerful once practice is over. He really sets the mood of the club, telling lots of jokes and making everyone laugh." Though sports clubs have a special culture that is quintessentially Japanese, Paul seems to feel right at home. He puts it this way: "Participating in a club is a good way to learn Japanese social rules, such as the importance of good manners and to respect those who are senior to you."

Paul says that he has also deepened his understanding of other countries by getting to know Japan. "There are lots of wonderful countries in the world. If you are willing to respect and accept other cultures, you can overcome barriers of language or nationality and establish a rapport with others. I have experienced this firsthand in the Aikido Club."

When asked about his dreams for the future, Paul replies, "I'd like to make use of my experiences in a job that contributes to international cooperation." Then he laughs and says, "I'm still thinking about it. I really don't know."
Paul turns to head back to the dojo. But first he leaves these words regarding the earnestness with which he engages in Aikido practice: "My goal is not to improve my technique. In Aikido the spirit is the important thing. Right now I enjoy Aikido very much."
(Date reported: December 11, 2001)

In front of the Phoenix Hall of the Byodo-in Temple

Academic Sightseeing in Uji – Masterpieces of Heian Aristocratic Culture: Byodo-in Temple and the Tale of Genji

Several students of "Japanese Studies" are studying at Kyoto University under a program organized by the Japanese Government. A total of 20 students from 11 countries were accepted for the 2001 academic year, and they have been pursuing their studies for one year now. In December of 2001 they went on an "academic sightseeing" trip to Uji as part of the program.

Led by Associate Prof. Mariko Mori (The Center for Student Exchange), 17 program participants, who had only just arrived in Japan in October, arrived in Uji under rainy skies. They immediately set out for their first destination, Byodo-in Temple.
Byodo-in Temple was built in 1052 by Yorimichi Fujiwara, then chief advisor to the Emperor. It is renowned as one of the finest expressions of the artistic sensibility of its time, considered to be the golden age of court culture. As one passes through the gate into the garden, the Amida Hall, in which an image of the Amida Nyorai, amitabha is enshrined, comes into sight. It is also known as the Phoenix Hall because of the bronze phoenixes mounted on the two ends of its roof. Said to represent a castle in paradise, it is both beautiful and dignified. The symmetrical design of the building is itself said to resemble the outstretched wings of the phoenix. Mattias Tommie Bockin, a student of architecture who hails from Sweden, had this to say: "I came to Japan to study contemporary architecture. But my visit here today has gotten me interested in ancient Japanese architecture as well."

The group next set off for the museum, where cultural treasures from the Phoenix Hall are stored. A number of precious objects were on display there, including a phoenix from the main temple building, and Buddhist statues. Standing before a temple bell said to be one of the three finest in the world, is Woo-jung Yang, a student from Korea. She remarked while examining it intently, "We have temple bells like this in Korea, but I have never seen one with such elaborate designs on it." The Cloud Chamber, with its statues of 52 bodhisattvas depicted happily riding on clouds, was another highlight. The students lost track of the time as they gazed the statues, which are rendered in flowing lines and each of which has a different facial expression.

After leaving the museum, the group walked down the road leading to the temple with the scent of green tea wafting about them. Their destination was the Tale of Genji Museum. Here scenes from the "Uji chapters" (so called because they are set in Uji) from the latter portion of the tale of Genji are depicted in images and models. The tale of Genji is a long novel written during the Heian period (794-1185) by a court lady known as Murasaki Shikibu. As they traveled through the world of the Uji chapters in the exhibit hall, with its many images bathed in an otherworldly light, the visitors had a chance to glimpse the glittering lifestyle of the Heian aristocrats. On display were everyday items from that time, such as ox drawn carriages and folding screens, as well as a life-size diorama depicting a scene from the novel. In the auditorium the visitors were shown a film depicting episodes involving Ukifune, the heroine of the Uji chapters. After watching the film Paula Farne, a student from U.K., remarked, "It's difficult to understand the story right away, but the beauty of the costumes made a deep impression on me."

This was a chance for the visiting students to come into contact with a famous building and a story that together symbolize the aristocratic culture of Japan some 1,000 years ago. There is no doubt that this experience will prove an invaluable one to each and every one of them as they continue their studies of the Japanese language and culture.
(Date reported: December 13, 2001)

The students consider the lives of the aristocracy of 1,000 years ago at the Tale of Genji Museum.

Examining the magnificent relief designs on a temple bell.

Shops lining the road leading to the temple selling green tea, for which Uji is famous.

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P R O M E 京都逍遥 N A D E

吉田神社

Yoshida Shrine The Ancient Shrine Continues to Watch Over Kyoto University

Yoshida shrine is located at the foot of Mt. Yoshida, which is part of the Higashiyama mountain range that borders the eastern edge of the city of Kyoto. Surrounded by a deep forest, the shrine stands quietly amid an undisturbed stillness. It was founded in 859, during the Heian period, by the powerful Fujiwara clan. In the latter half of the fifteenth century, Kanetomo Yoshida, as scholar and priest, established there a branch of the Shinto religion known as Yoshida Shinto. Yoshida shrine served as the center of this movement, becoming a focus of reverence for people both high and low from all over Japan. The shrine continues to be an important Shinto institution to this day. Kyoto University, which is located adjacent to Yoshida shrine, has long had a special association with it. Chief Priest Tsutomu Miyashita, who has held his present position since 1949, notes: "We have a connection with the university that goes back more than 100 years to the groundbreaking ceremony, which was performed by priests from our shrine." He also relates the following anecdote: "An elderly man more than 90 years old who graduated from Kyoto University many years ago once visited the shrine and told me, 'The university has changed completely since my day; it was only when I visited Yoshida shrine that I felt I had finally returned to my alma mater.'" Now and in the years to come Yoshida shrine will surely continue to be an ageless, unchanging presence watching over promising young people as they make their start in the world.

The vermilion lacquer of the torii gate and the pillars of the main shrine building create a lovely complement to the vivid autumn colors of Mt. Yoshida. Many graduates of Kyoto University retain a warm feeling in their hearts for this ancient shrine and the natural beauty of its setting.

The "Kurenai Moyuru" monument. It is inscribed with the words to "Kurenai Moyuru," a dormitory song of the 3rd Higher School, predecessor of Kyoto University. The song extols the beauty of Mt. Yoshida. The monument was constructed in 1957 by the 3rd Higher School Alumni Association in commemoration of the 90th anniversary of the school's founding.

The Daigengu structure symbolizes the belief system of Yoshida Shinto. Many of Japan's Nobel laureates are graduates of Kyoto University, and one day a newspaper reporter asked Chief Priest Miyashita why this was. "It may be a benefit of the constant protection provided by nearby Yoshida shrine," he replied.